DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name:	**DRESSER INDUSTRIES, INC- WAYNE DIVISION**
Facility Address:	**124 WEST COLLEGE AVENUE, SALISBURY, MD 21804**
Facility EPA ID #:	**MDD 044 147 098**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

X If yes - check here and continue with #2 below.

____ If no - re-evaluate existing data, or

____ if data are not available skip to #6 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

X If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

____ If unknown - skip to #8 and enter "IN" status code.

Rationale:
Extensive work has been performed on behalf of and under the oversight of the U.S. Environmental Protection Agency (EPA) to investigate environmental conditions at the former manufacturing facility owned Dresser, Inc. ,located at 124 West College Avenue in Salisbury, Wicomico County, Maryland as shown on Reference 1., Figure 1. In January 2002, the U.S. Army Corps of Engineers (COE) completed on behalf of EPA an Environmental Indicators Inspection Report for the Facility and concluded that certain additional information was needed with respect to portions of the Facility before the process of evaluating Environmental Indicators (EIs) for the Facility could be completed. Since that time, Dresser has undertaken a series of supplemental assessments at the Facility under the oversight by EPA and in accordance with work plans approved by EPA. The results of these assessments are presented in References 1., 2., and 3., below

A total of fifteen groundwater monitoring wells have been installed at the Facility which have been sampled as part of characterizing groundwater conditions beneath the Facility. In addition, a total of 40 groundwater samples (excluding duplicate samples) have been collected from 40 soil borings advanced into the water-bearing zone beneath the Facility. Reference 1., Figure 2 shows the location of these groundwater sampling points. An offsite well used for irrigation purposes located on property owned by College Square LLLP directly north of the Facility also has been sampled. All of the groundwater samples collected by Dresser have been analyzed for volatile organic compounds (VOCs). Certain of those groundwater samples have

Reference(s):
1. Dresser, Inc. - Salisbury, MD CA750. EI Submission and Exhibit A (Groundwater Modeling Report), Jonathon Raser, Dresser, Inc. September 21, 2004 e-mail.
2. Groundwater Sampling Report, Dresser, Inc. – Wayne Division Site, 124 West College Avenue, Salisbury, Maryland, EPA ID# MDD 044 147 098." September 2004
3. Additional Investigation Report, Dresser Inc., Wayne Division Site, 124 West College Avenue, Salisbury, Maryland 21804, Salisbury, Maryland, EPA ID# MDD 044 147 098. November, 2003
4. Expanded Site Investigation, Dresser Industries, Inc., Wayne Division Site, 124 West College Avenue, Salisbury, Maryland 21804, Salisbury, Maryland, EPA ID# MDD 044 147 098. January, 2003.
5. EPA Environmental Indicators Inspection Report, dated January 15, 2002.
6. Phase I Environmental Site Assessment, December 2000
7. Draft Documentation of EI Determination, Dresser Industries, Inc- Wayne Division, December12, 1999.
8. Dresser Site Investigation Report, dated April 19, 1994
9. Environmental Priorities Initiative Preliminary Assessment of Dresser Wayne Industries, 12/89

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[1]**"Contamination"** and "**contaminated"** describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

been analyzed for lead or metals designated as priority pollutants (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium and zinc) along with hexavalent chromium. The results of the groundwater sampling performed during the past several years are described in the various reports that have been submitted to EPA and are summarized in Reference 1., Table 1. Reference 1., Figure 3 presents groundwater exceedences at the onsite monitoring wells determined by the most recent results available at each well.

The analytical results obtained from groundwater monitoring activities have been compared to the federal maximum contaminant levels (MCLs) established by EPA pursuant to the Safe Drinking Water Act and generic numeric cleanup standards developed by the Maryland Department of the Environment (MDE) for groundwater in Type I and II Aquifers (August 2001). The following VOCs have been detected at least once in groundwater samples collected by Dresser at the Facility at levels exceeding either the federal MCLs or the generic numeric groundwater cleanup standards developed by MDE -- acetone, benzene, 1,2-dichloroethene (1,2-DCE), ethylbenzene, methyl tert-butyl ether, naphthalene, trichloroethene (TCE), tetrachloroethene (PCE), and toluene. In general, the VOCs that have been detected in groundwater beneath the Facility have been found at low to trace levels. Only PCE and TCE have been found in monitoring wells near the downgradient boundaries of the Facility at levels exceeding either the federal MCLs or the generic numeric groundwater cleanup standards developed by MDE. No metals have been found in groundwater samples at concentrations exceeding either the federal MCLs or the generic numeric groundwater cleanup standards developed by MDE.

Reference(s): See Page 2

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater" as defined by the monitoring locations designated at the time of this determination)?

__**X**___ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]**)**.

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "**existing area of groundwater contamination"[2]) -** skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale:

Groundwater elevation measurements have been obtained on multiple occasions from the monitoring wells at the Facility. Reference 1., Table 2 summarizes the various groundwater elevation measurements that have been collected. Based on groundwater elevation measurements collected from all fifteen monitoring wells currently present at the Facility on August 13, 2003, September 15, 2003 and August 11, 2004, the direction of groundwater flow beneath the Facility is to the northwest. Groundwater elevation contour maps for these three gauging events are in Reference 1., Figures 4, 5 and 6.

Based on the direction of groundwater flow beneath the Facility, monitoring wells MW-8 through MW-13 are generally located adjacent to the downgradient boundaries of the Facility. While various VOCs have been detected in groundwater beneath the Facility, only PCE and TCE have been detected in monitoring wells MW-8 through MW-13 at levels exceeding either the federal MCLs or the generic numeric groundwater cleanup standards developed by MDE. During the most recent round of groundwater monitoring conducted in August 2004, no VOCs were detected in monitoring wells MW-11 and MW-13. Only PCE, TCE, ethylbenzene, xylene, cis-1,2-DCE and 1,1,1-trichloroethane (TCE) were detected in any of the other four downgradient monitoring wells that were sampled. The levels of ethylbenzene, total xylenes and TCA that were detected were all more than two orders of magnitude less than the corresponding MCLs and MDE generic groundwater cleanup standards. Moreover, cis-1,2-DCE was detected at a concentration well below the corresponding MCL and MDE generic groundwater cleanup standard for that substance. These sampling results indicate that VOCs (other than PCE and TCE) are not present in monitoring wells adjacent to the downgradient boundaries of the Facility at levels of concern and remain limited to interior areas of the Facility (to the extent present).

With respect to PCE and TCE, the groundwater sampling results indicate that conditions are stable. During the most recent round of groundwater monitoring conducted in August 2004, PCE and TCE were detected in monitoring well MW-8 at concentrations of 0.035 mg/l and 0.0087 mg/l, respectively. These levels are

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[2] **"existing area of contaminated groundwater"** is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

lower than the concentrations of PCE and TCE that were detected in monitoring well MW-8 in September 2003 (0.0433 mg/l and 0.015 mg/l, respectively). (For comparison purposes, the MCLs and MDE generic groundwater cleanup standards for PCE and TCE are both 0.005 mg/l.) PCE was also detected in monitoring well MW-10 at a concentration of 0.0098 mg/l and in monitoring well MW-12 at a concentration of 0.0019 mg/l. The concentrations are approximately the same as the levels of PCE detected in those monitoring wells in September 2003. In addition, while TCE was detected in monitoring wells MW-11 and MW-13 in September 2003, TCE was not detected in those two monitoring wells during the most recent round of groundwater sampling.

During the August 2004 groundwater sampling event, groundwater samples were collected from an irrigation well located on property directly to the north of the Facility. No VOCs were detected in the groundwater samples from the irrigation well.

The fact that cis-1,2-DCE was detected in monitoring well MW-8 along with PCE and TCE is indicative that natural biodegradation of the PCE is occurring. Cis-1,2-DCE is produced through the natural reductive dechlorination of PCE and TCE.

To further evaluate the presence of PCE and TCE in groundwater beneath the Facility and the potential for PCE and TCE to migrate offsite at levels of concern, Dresser used the BIOCHLOR model (Version 2.2) to estimate the distance beyond monitoring well MW-8 that PCE or TCE might be expected to migrate at levels above the federal MCLs for those substances. The groundwater modeling that Dresser performed is described in a Reference 1., at Exhibit A. A series of conservative assumptions were used in the modeling exercise. Two separate scenarios were evaluated -- one based on the assumption that a continuing source of PCE and TCE is present upgradient of monitoring well MW-5 beneath the main building at the Facility and the other based on the assumption that a slowly decaying source of PCE and TCE is located upgradient of monitoring well MW-8 near the engineering test building. Under either scenario, the modeling results indicate that the maximum distance that PCE is expected to migrate downgradient of monitoring well MW-8 at levels above the federal MCL for PCE of 0.005 mg/l is approximately 165 feet. Similarly, the maximum distance that TCE is expected to migrate downgradient of monitoring well MW-8 at levels above the federal MCL for TCE of 0.005 mg/l is approximately 90 feet. Daughter products from the biodegradation of the PCE such as 1,2-DCE and vinyl chloride are not predicted to be present at concentrations exceeding the corresponding MCLs for those substances. Moreover, the results of the modeling evaluation suggest that releases of chlorinated solvents occurred between 20 and 30 years ago and that groundwater containing PCE or TCE at levels exceeding the MCLs is not expected to migrate in the future more than approximately 20 feet beyond its present location before steady state conditions are achieved. The results of the modeling evaluation provide further support for concluding that groundwater conditions beneath and adjacent to the Facility are stable.

Reference(s): See Page 2.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

____ If yes - continue after identifying potentially affected surface water bodies.

X If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale:

No surface water bodies are present in proximity to the Facility. The nearest surface water body in a hydrologic downgradient direction from the Facility is the Wicomico River located more than 4,000 feet from the Facility. The most recent groundwater sampling results show that no substances of concern are present in the monitoring wells located along the downgradient perimeter of the Facility at levels above the federal MCLs or the MDE generic groundwater cleanup standards except for PCE and TCE. Based on groundwater modeling, groundwater containing PCE and TCE at levels above the federal MCLs and the MDE generic groundwater cleanup standards is not expected to migrate further than approximately 165 feet downgradient of monitoring well MW- 8.

Reference(s): See Page 2

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

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_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hypothetic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refuge) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

X If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale:

Additional activities will be undertaken at the Facility to complete the corrective action process under the Resource Conservation and Recovery Act. The scope and nature of these activities will be developed in conjunction with EPA.

Reference(s): See Page 2.

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

X **YE -** Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **DRESSER, INC -WAYNE DIVISION** facility , EPA ID # **MDD 044 147 098** , located at **SALISBURY, MD**. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

____ IN - More information is needed to make a determination.

Completed by (signature) /s/ Date 9/24/04
(print) VERNON BUTLER
(title) RPM

Supervisor (signature) /s/ Date 9/27/04
(print) BOB GREAVES
(title) CHIEF
(EPA Region III) RCRA OPERATIONS BRANCH

Locations where References may be found:
EPA REGION III
RCRA REGIONAL LIBRARY

Contact telephone and e-mail numbers:

(name) Vernon Butler, RPM
(phone #) (215) 814 - 3425
(e-mail) butler.vernon@epa.gov